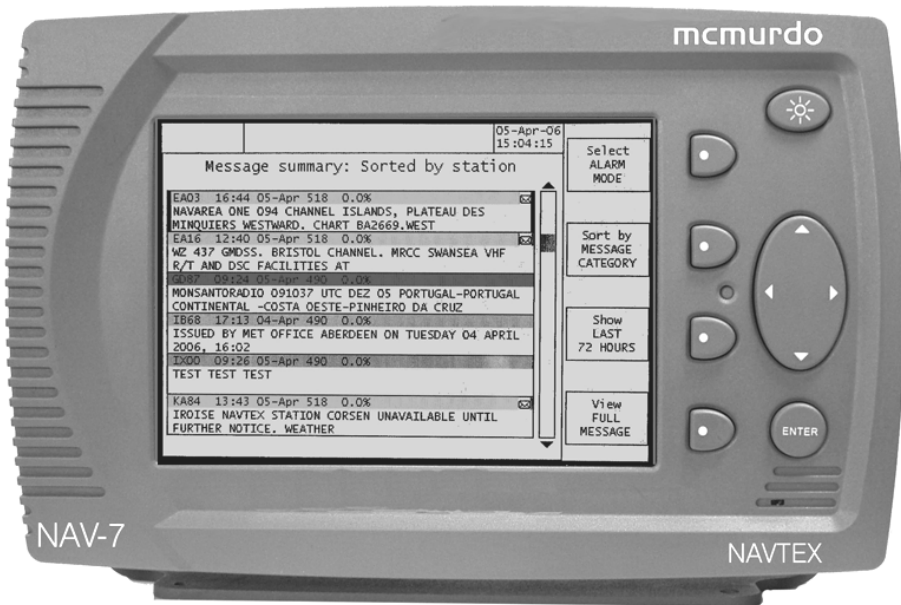




NAV-7

GMDSS TRI-CHANNEL NAVTEX RECEIVER

USER & INSTALLATION MANUAL

VESSEL IDENTIFICATION INFORMATION

<i>Name</i>		
<i>Call Sign</i>		
<i>MMSI</i>		
<i>NAV-7 S/N</i>		
<i>Antenna Type</i>		
<i>RX frequencies supported by antenna</i>	<i>518 kHz</i>	
	<i>490 kHz</i>	
	<i>4209.5 kHz</i>	

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Part No : 35-821

Applicability of this manual

This manual applies to NAV-7 equipment software Issue 4 released March 2008.

Disclaimer

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SAFETY NOTICES

 **WARNING:** Do not connect the NAV-7 main unit directly to a AC electrical supply, as an electric shock or fire hazard could result.

 **WARNING:** Do not connect the NAV-7 system to a DC supply exceeding 31 V or reverse the supply polarity.

 **CAUTION:** Do not bypass the built in fuse

 **CAUTION:** The NAV-7 system is designed for operation in the temperature range - 15 °C to +55 °C. Do not use the system in environments which exceed this range.

 **CAUTION:** The NAV-7 unit is not water-proof. Consequently it must be located in a dry place and must be protected from direct contact with water.

 **CAUTION:** Do not locate the NAV-7 unit in a position where;

- a) the controls of the vessel may be obstructed.
- b) it may obstruct normal movement around the vessel.
- c) it may cause bodily injury.

 **CAUTION:** Unauthorised opening of the NAV-7 unit or antenna units will invalidate the warranty.

 **CAUTION:** NAVTEX is for use as an aid to navigation and should not lead to a reduction in the level of good seamanship required at all times.

 **CAUTION:** Reception of NAVTEX messages cannot always be guaranteed and is dependant on the quality of radio propagation at the time. No liability can be accepted for the non transmission or non reception of NAVTEX messages.

 **CAUTION:** Compass Safe Distances

NAV-7 main unit compass safe distance 0.87m

Compass deviation; 0.3° at 0.65m

1° at 0.41m.

Recommendation

Connection of a source of UTC data to either the NMEA 0183 or the IBS port is strongly recommended for best operation of the NAV-7.

QUICK START

NAV-7 is extremely easy to operate:

- Apply power at the vessels power switch panel
- The NAV-7 will start up after a few seconds delay
- Set UTC time and date (automatic when connected to GNSS / GPS)
- The NAV-7 will now start to receive and display NAVTEX messages dependant on the transmission schedule of the NAVTEX stations within the vessels current region.

Note It may be several hours before the first message is received, this is dependant on NAVTEX transmission coverage provided locally.

Take the time to read this manual carefully as it contains essential information regarding the operation and maintenance of the NAV-7 and a useful background to the NAVTEX system.

Should your have any questions, or require advice regarding McMurdo products our website 'frequently asked questions' is a good place to start. From the web site you can also leave a message for our customer service team, visit; www.mcmurdo.co.uk

ABOUT NAV-7

The NAV-7 has been designed to meet the requirements of IMO (Intentional Maritime Organisation) MSC.148 (77) and IEC technical standard 61097-6 (Ed 2.0).

The NAV-7 has three separate receiver channels, one each tuned to 490 kHz, 518 kHz and 4209.5 kHz. The NAV-7 will receive on all three frequencies simultaneously in those parts of the world where transmissions are available (refer to Appendix 1).

The NAV-7 can be set up to filter out stations and/or message categories that are not required by the User.

The NAV-7 is capable of being connected to an Integrated Bridge System (IBS), transferring NAVTEX messages to other navigational aids if required. Note that the IBS must be compliant with the serial port requirements of IEC 61097-6 (Ed 2.0).

The NAV-7 will accept UTC time & date information from the IBS port if available. UTC time & date will be used to timestamp received NAVTEX messages.

Permanent installation of the NAV-7 can be made with either the bulkhead-mounting bracket or the flush panel mounting kit provided.

The NAVTEX antenna should be mounted where it is elevated clear of metal objects in a location where it cannot easily be damaged.

INTRODUCTION

NAVTEX is a method of transmitting navigational warnings and weather forecasts from designated coast radio stations. All English language transmissions are made on the 518 kHz NAVTEX channel. Each NAVTEX station is allocated several time slots during the day when it is permitted to transmit, normally at four hourly intervals. The exceptions to this are gale warnings and search and rescue messages which may be transmitted at any time.

Reception of 518 kHz NAVTEX transmissions is normally limited to an area of 200 - 300 miles radius around each transmitting station, although considerably greater ranges are possible at night. Subject to IMO approval, additional local language transmissions are sent on 490 kHz and on 4209.5 kHz, NAV-7 supports simultaneous reception of all three NAVTEX channels.

Designed to the latest International specifications, NAV-7 meets IMO requirements under GMDSS and is designed for simplicity of operation. It will provide up to date MSI (Marine Safety Information) and weather forecasts and is suitable for use by all classes of commercial vessels and large pleasure craft. It will display and store NAVTEX messages without manual intervention within designated areas of NAVTEX service coverage.

If the vessel is located within the coverage area of several NAVTEX stations (particularly at night), the NAV-7 may overwhelm you with information. It can therefore be set up to display only those stations and message categories you want to receive and which are applicable to the area in which the vessel is currently sailing.

Normally, routine NAVTEX messages are repeated at four hourly intervals. Provided that the NAV-7 is left running, repeated messages are not displayed more than once. Each message is retained for three days (72 hours) after its last reception before being automatically deleted, unless the message has been marked as locked.

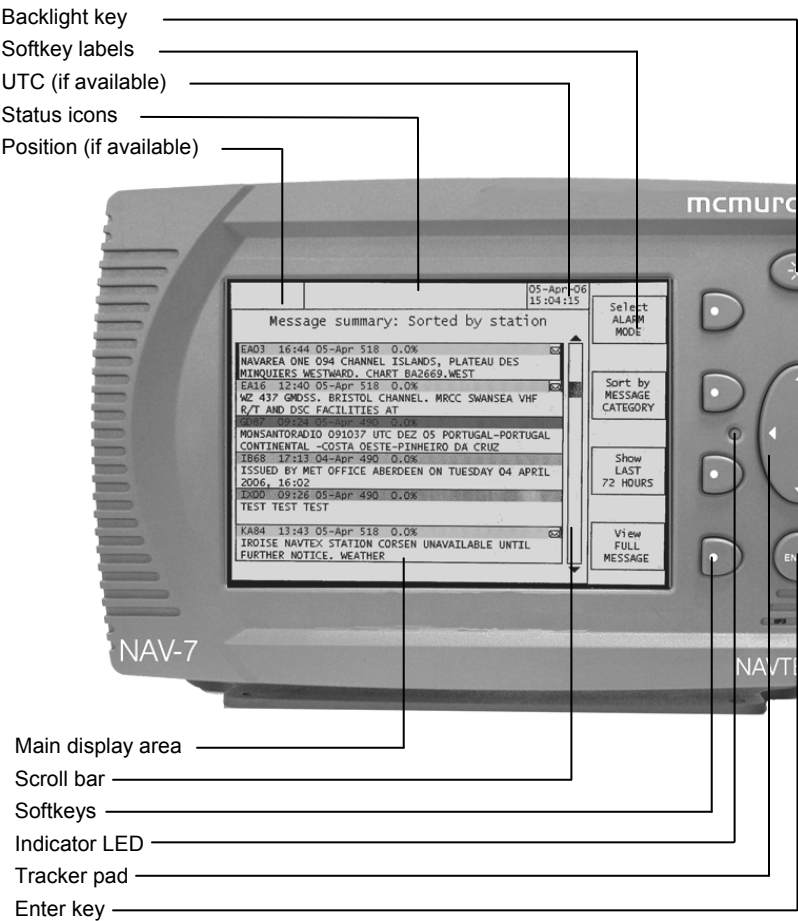
Full detail of the GMDSS NAVTEX service is published in the Admiralty List of Radio Signals Volume 5, Global Maritime Distress and Safety System (GMDSS). Published by the United Kingdom Hydrographic Office.

The IMO and various national coastguards also have informative websites; see the links page at www.mcmurdo.co.uk

OPERATION

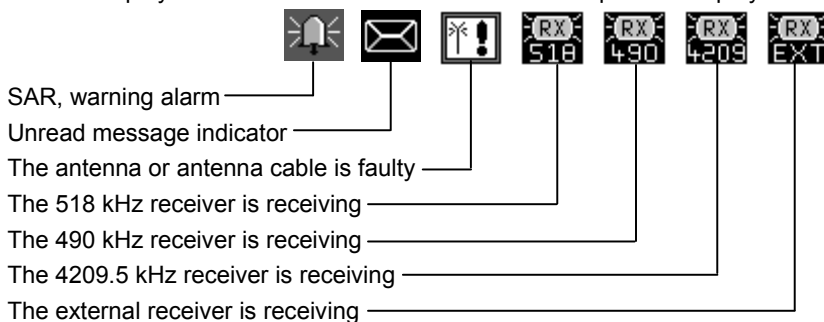
NAV-7 CONTROLS

The NAV-7 has been designed to be easy to use with an intuitive user interface and softkeys.



Display Icons

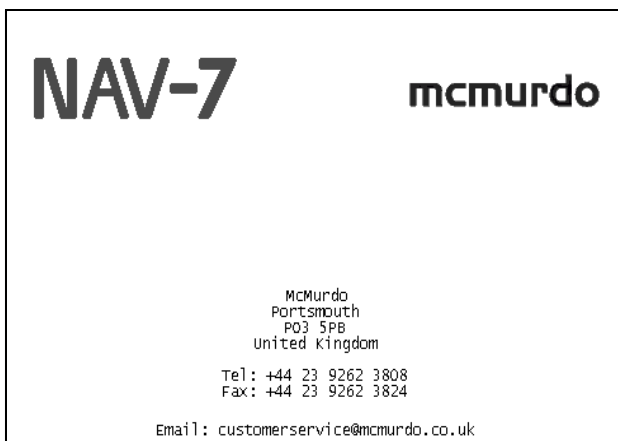
The NAV-7 displays various icons in the status bar at the top of the display.



OPERATION

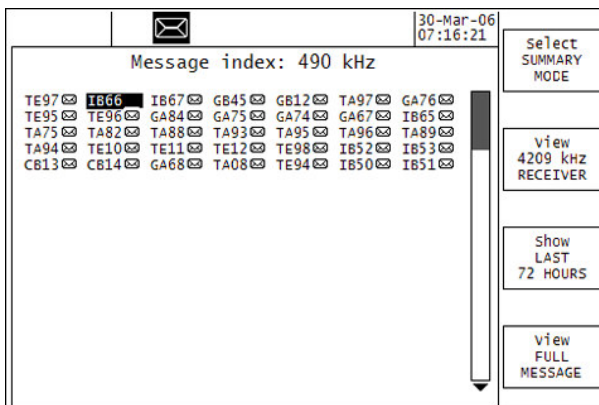
Switch on the NAV-7 by applying power via a circuit breaker or switched fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.



The NAV-7 start-up screen will now be shown.

This screen disappears after 30 seconds; it may be removed sooner by pressing any key.



The NAV-7 is now ready to receive NAVTEX messages.

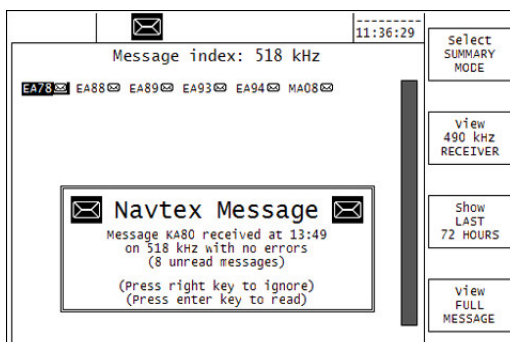
Receiving NAVTEX messages

When the NAV-7 begins to receive a signal, one or more of the receiver icons at the top of the screen will appear to indicate which of the receivers is active.

When a complete message has been received, a pop-up appears on the display indicating that a new message is available and the "unread message" icon flashes. The message can be read by pressing the Enter key, or the popup can be removed without reading the message by pressing the Right key. As each new message is received, the NAV-7 may also generate a single short beep to attract attention to the new message. This audible alert can be disabled on the Setup mode: System options page if it is not required.

Any messages that are not read immediately will be marked with the "unread message" symbol in both the Index and Summary modes. The "unread message" icon at the top of the display continues to flash until all messages have been read.

Note that while a popup is on display only the Enter or Right buttons have any effect; all other keys are disabled until the popup is removed.



Alarms

The message category is used to classify the nature of each NAVTEX message. Of particular note are message types 'D' (search and rescue), 'A' and 'L' (navigational warnings) and 'E', 'B' and 'C' (meteorological warnings). When a message with any of these message categories is received the NAV-7 operates its alarm relay contacts and transmits an NMEA "ALR" sentence to the currently selected alarm port. The alarm relay continues to operate until the alarm is acknowledged either by removing the popup or by reception of an appropriate NMEA "ACK" sentence from another connected device. Search and rescue messages (category 'D') cannot be read later; the popup box can only be cleared by pressing the Enter key and reading the message.

Finding and viewing NAVTEX messages

The NAV-7 displays NAVTEX messages in several ways designed to make finding and viewing particular message categories or an individual message easy and convenient.

Message Index

The screenshot shows the 'Message index' screen. At the top, it displays '30-Mar-06 07:43:31' and 'Message index: 490 kHz'. Below this is a list of message indices: TE97, I866, I867, GB45, GB12, TA97, GA76, TE95, TE96, GA84, GA75, GA74, GA67, I865, TA75, TA82, TA88, TA93, TA92, TA96, TA94, TE10, TE11, TE12, TE98, I852, I853, CB13, CB14, GA68, TA08, TE94, I850, I851. To the right of the list are four buttons: 'Select SUMMARY MODE', 'View 4209 KHZ RECEIVER', 'Show LAST 72 HOURS', and 'View FULL MESSAGE'.

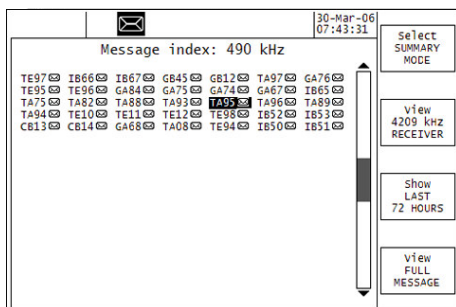
Message Summary

The screenshot shows the 'Message summary' screen. At the top, it displays '30-Mar-06 07:44:53' and 'Message summary: Sorted by time'. Below this is a list of message summaries: 'GA74 21:02 03-APR 490 0.0%', 'MONSANTORADIO 310356 UTC MAR 06 PORTUGAL-PORTUGAL CONTINENTAL - COSTA OESTE-PINHEIRO DA CRUZ', 'GA67 24:01 03-APR 490 0.0%', 'MONSANTORADIO 301451 UTC MAR 06 PORTUGAL-PORTUGAL CONTINENTAL - COSTA SUL-VILA REAL DE SANTO ANTONIO', 'EL74 20:42 01-APR 518 0.0%', 'ISSUED BY THE MET OFFICE AT 031900 UTC', 'GALE WARNINGS: FT7260Y', 'EL38 20:34 03-APR 518 0.0%', 'FOOT SUBJECTS AND GUNFACTS WARNING (ALL TIMES UTC)', 'PE76 20:17 03-APR 518 0.0%', 'FROM ALGERS 03 2006 FORECAST FOR ALGERIAN COAST', 'VALID TONIGHT APRIL 03/04 2006 SAIDIA CHECHELL', 'NETHERLANDS COASTGUARD GALE WARNING NR. 67 031925', 'UTC APR ISSUED 03 APR 1911 UTC VIKING'. To the right of the list are four buttons: 'Select ALARM MODE', 'Sort by STATION IDENT', 'Show LAST 72 HOURS', and 'View FULL MESSAGE'.

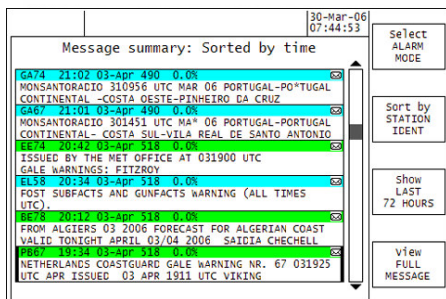
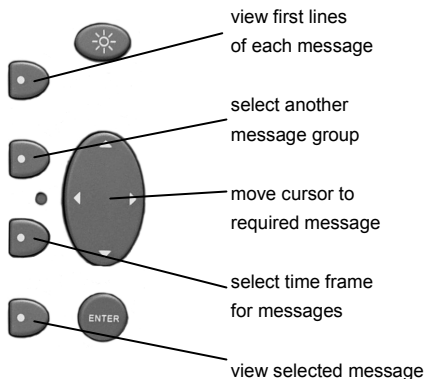
Full Message

The screenshot shows the 'Full message view' screen. At the top, it displays '30-Mar-06 07:45:41' and 'Full message view: 518 kHz'. Below this is the full text of the message: 'PB67 19:34 03-Apr 518 0.0%', 'NETHERLANDS COASTGUARD GALE WARNING NR. 67 031925 UTC APR ISSUED 03 APR 1911 UTC VIKING', 'NORTH 8 FORTIES', 'NORTHWEST 7 FISHER', 'NORTHWEST 7 OTHER DISTRICTS:', 'NO WARNING'. To the right of the text are four buttons: 'Select ALARM MODE', 'PRINT MESSAGE', 'LOCK MESSAGE', and 'Select SUMMARY MODE'.

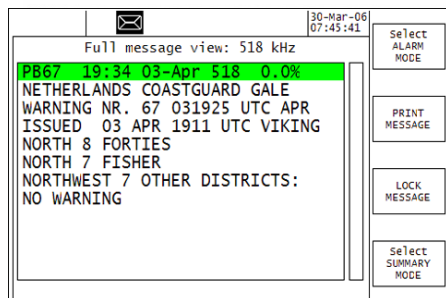
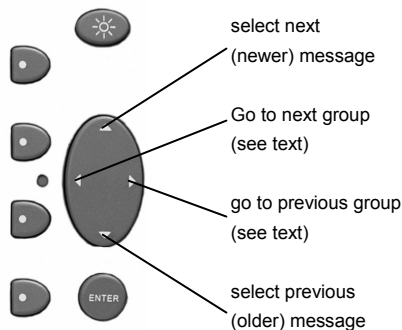
Message displays



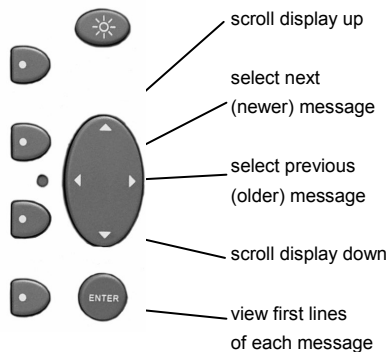
Message index display



Message summary display



Full message display



Message index display

The Message index display shows the identifiers of messages from a specific receiver. Unread messages have an “envelope” (✉) mark; locked messages (see Full message display) have a “key” (🔑) mark.

Message identifiers can be expanded to show either the first two lines or the full message by selecting the desired message and pushing the appropriate softkey.

Messages from another receiver can be displayed using the View softkey, which cycles through the available sources.

Messages are grouped by time interval. The Show softkey cycles through the set intervals.

Message summary display

The Message summary display shows the first two lines of each message, selected by various criteria.

Selection criteria are time, station identity and message type. The Sort by softkey cycles through these criteria.

Depending on the selection, the “group” is a 4-hour period, a station or a message type.

The Show softkey controls the total number of messages displayed by suppressing messages which are older than the selected time frame.

A message can be shown in full by selecting it and pushing the View softkey.

Full message display

Because messages are automatically erased 72 hours after they are received, it is necessary to take action to retain an important message beyond this time. Displaying the message and pressing the Lock softkey causes the message to be retained indefinitely. A locked message is identified by a “key” (🔑) mark in the Index display.

A locked message is unlocked by displaying it (in this view) and pressing the Unlock softkey.

Up to 250 messages can be saved for long term retention; once the limit has been reached, operating the Lock softkey will not lock any more messages until some are unlocked again.

Minimising the number of messages displayed

After the NAV-7 has been switched on for a while there will be a large number of NAVTEX messages stored in memory. These can be quite overwhelming if the user is looking for particular message categories or an individual message.

Several design features have been incorporated into the NAV-7 to make day to day operation easier:

- Separate frequency channel pages
- Station filtering

- Message category filtering
- Time-limited display of messages

Separate frequency channel pages

A separate NAVTEX message display is provided for each of the 3 receiver channels. All 518 kHz messages appear together, all 490 kHz messages appear together and all 4209.5 kHz messages appear together. Switch between these displays by using the View softkey.

Station filtering

NAVTEX transmitting stations that are not required can be de-selected by making the appropriate selections in the Setup screens.

Message category filtering

NAVTEX message categories that are not required can be de-selected by making the appropriate selections in the Setup screens.

Time-limited display of messages

In order to access recent messages quickly the Show softkey can be used to show only NAVTEX messages that have been received in the selected time period (last 4 hours, last 12 hours etc)

SETUP MODE

To enter Setup mode, press and hold the ENTER key for 3 seconds.

All of the user-editable setup parameters are stored in non-volatile memory and will be unchanged after a power cycle, unless otherwise stated in the descriptions of each individual page.

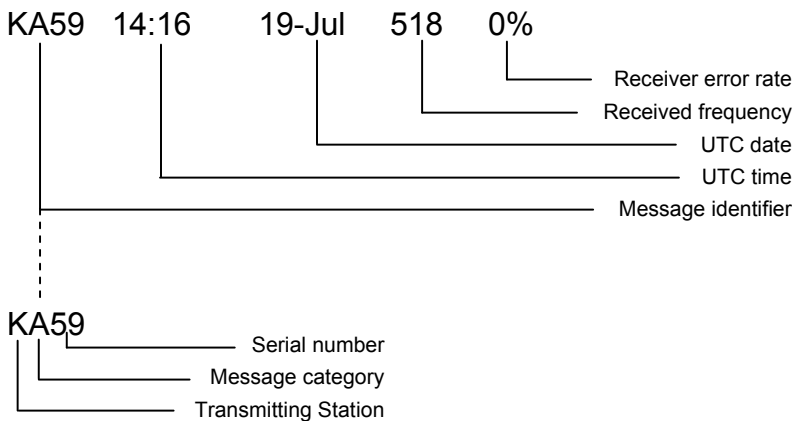
To exit from Setup mode and return to normal operating mode, press and hold the ENTER key for 3 seconds until the display returns to normal operating mode, or press the top softkey to select the next main page.

Note that message pop-ups do not appear while in Setup mode to ensure they do not interrupt the editing of a configuration field. Always exit from Setup mode when you have finished configuring the NAV-7 and return to normal mode before leaving the NAV-7 unattended.

NAVTEX message headers

At the beginning of each NAVTEX message there is a message header which identifies the source and nature of message, time and date of reception, received frequency and error rate.

For example:



In the Message Index display only the message identifier is visible.

It is recommended that the User or Installer takes time to set up the NAV-7 to filter out those stations and message categories that are not required. In this way the display is kept uncluttered; only those messages that are required will be visible.

Messages are selected for display by the NAV-7's software comparing the Station and Message Category information encoded into the message identifier (eg KA in the diagram above) with the filter settings entered by the user during setup.

The NAVTEX message information bars are colour coded for each type of message as defined in the table below.

To enter setup mode, press and hold the ENTER key. After a few seconds the Message filters page will be displayed.

Page 16

This page can be used to indicate that messages from specified Transmitting Stations or of specified Message Categories should NOT be displayed, stored or output as required.

Each receiver has its own separate set of message filters; pressing the **Select** **XXXX KHz RECEIVER** softkey cycles round the available receivers. The message filter settings are all non-volatile and will be unchanged after a power cycle.

By default only message categories 'A' to 'F', 'H', 'J' to 'L', 'V' and 'Z' are enabled for all Transmitting Stations. This is indicated by the check boxes for categories 'G', 'I', 'M' to 'U' and 'W' to 'Y' all being marked to indicate that they are being filtered out.

In order to deselect a Transmitting Station or Message Category, navigate to the relevant checkbox using the pad (**◀**, **▶**, **▲** and **▼** keys) and press **ENTER**. The checkbox will then be marked to indicate that the Transmitting Station (or Message Category, as appropriate) is now deselected and will not appear on the display.

Note that deselecting a Message Category (say 'I') in the top row (labelled 'All') will remove Message Category 'I' from all Transmitting Stations. To disable message categories from a specific station identity (eg 'K'), scroll down until the selection panel for 'K' is displayed, then select the appropriate check box. Deselecting the first message category (labelled '*') will toggle the state of all Message Categories from the selected Station.

Message categories 'A', 'B', 'D' and 'L' cannot be individually controlled. If all message categories for a station are deselected then categories 'A', 'B', 'D' and 'L' will also be inhibited – so the station will be completely disabled. If at least one message category is enabled for a particular station, then messages 'A', 'B', 'D' and 'L' will also be enabled for that station.

There are three sets of message filter options for every Transmitting Station and Message Category. The 'STORE' filter indicates that the selected message shall be neither displayed nor stored in the non-volatile memory. The 'IBS' filter indicates that the message shall not be sent to the IBS port on reception (if output of NRX sentences to the IBS port is enabled). The 'PRINT' filter indicates that the selected message should not be sent to the printer on reception (if printer output is enabled).

Note that the **ENTER** key toggles the value of any check box from checked to unchecked and back again. Similarly, toggling any check box in the 'All' row, or in the column headed '*' will toggle the other entries in the row or column as appropriate.

Setup mode: Receiver options

The Setup mode: Receiver options page contains diagnostics to assist with installing and fault finding the NAV-7.

30-Mar-06
08:31:20

Setup mode: Receiver options

Antenna power: Auto sense
Antenna status: Unknown
Signal strength:
Monitor source: **None**

select
INDEX
MODE

view
SYSTEM
OPTIONS

Pause
MONITOR

The lower part of the display is a monitor area which shows all received NAVTEX characters in real time from the receiver selected as the monitor source, including the phasing character (Φ) and receive character error symbol (*), regardless of transmitting station and message category filter settings.

Setup parameter	Comment
Antenna power	Enabled for <i>active</i> antenna or Disabled for <i>passive</i> antenna or Auto sense allows the NAV-7 to detect the antenna type
Antenna status	Unknown: see Troubleshooting guide Active: an <i>active</i> antenna is connected Passive: a <i>passive</i> antenna is connected Overload: excessive current; see Troubleshooting guide Error: see Troubleshooting guide
Signal strength	 The size of the bar indicates the highest signal strength being currently received by any of the three receivers
Monitor source	Selects which receiver to monitor. This parameter is always reset to 'None' after a power cycle.

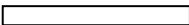
Checking the antenna:

You may wish to check that the NAVTEX antenna position is suitable by inspecting the signal strength during a known NAVTEX transmission from a local station.

Interpreting the diagnostics aids:

When a NAVTEX signal is being received, the appropriate receiver frequency icon appears at the top of the display. If the *Monitor source* is set to this frequency then the received data will appear in the *Monitor window*.

Use the *Receive icon*, *Signal strength* bar and *Monitor window* to help diagnose installation problems and/or as a check that your NAV-7 is working correctly.

Receive icon	Signal strength bar	Monitor window	Comments
OFF		No new chars being received	No current NAVTEX transmission
OFF		No new chars being received	Local in-band interference present, or NAVTEX station transmitting un-modulated RF
		Set monitor source to 518 kHz	Correct operation, NAVTEX data will be shown in monitor window

Setup mode: System options

The Setup mode: System options page contains general information about the NAV-7 and allows control over several aspects of the user interface.

30-Mar-06
08:25:36

Setup mode: System options

Software version 0.3.1
Display model 1.0.1
Serial no 3508000368
operating mode Normal

Time 08:25:36 NMEA checksums Required
Date 30-Mar-06
LED function Alarm active
key click On
Audible alarm On
Message popup Normal skip 4209 index No
Full font size Large skip ext index Yes

Select INDEX MODE

view SERIAL OPTIONS

FACTORY RESET

RECEIVER SETUP

Setup parameter	Description
Software version Display model Serial no	These parameters show the software version, hardware model and the individual serial number of the NAV-7. These values cannot be edited
Operating Mode	Normal – normal use aboard vessel Shore Station – displays all messages including repeats, ignoring filters and 72-hour limit Demonstration – for use at exhibitions, etc
Time Date	These parameters allow the time and date to be set manually in installations where there is no source of ZDA sentences
LED function	Selects whether the LED on the front of the NAV-7 is used to indicate a new message or an active alarm
Key click	Allows key click sound to be disabled
Audible alarm	Allows the internal audible alarm to be disabled in installations where the NAV-7 is not located at the main navigation position of the vessel. Note that this setting does not affect the operation of the integral alarm relay or the generation of alarm sentences.
Message popup	Allows message popups to be disabled or confined to SAR messages only
Full font size	Offers three choices of message font size in Full Message view
NMEA checksums	Controls if incoming NMEA sentences require checksums (for compatibility with older equipment)
Screen timeout	This setting allows the display to be automatically blanked after a certain period of time. While the display is blanked, pressing any key, or the receipt of a new message will turn it on again. Note that this setting only affects the display screen; all the receivers in the NAV-7 continue to work normally even while the display is blanked.
Skip 4209 index Skip ext index	These fields allow the 4209.5 kHz or external receiver index pages to be skipped in installations where the 4209.5 kHz receiver or the external receiver are not used

WARNING: Because messages are automatically deleted after 72 hours, changing the time or date may cause stored messages to be lost.

Setup mode: Serial options

The Setup mode: Serial options page contains setup and configuration parameters for the two serial ports on the NAV-7 unit. The lower section of the display provides a monitoring facility for incoming messages on the selected port.

		08:01:21	Select INDEX MODE
Setup mode: Serial options			
IBS port speed	115200	Printer output	NMEA port
NMEA port speed	4800	NRX output	IBS port
		ALR output	IBS port
Print delay	010		View MESSAGE FILTERS
Printer width	040		
Printer mode	On demand		
Monitor source	None		Pause MONITOR

Setup parameter	Description
IBS port speed	Selects the baud rate for each serial port
NMEA port speed	
Print delay	Specifies a number of seconds to pause between printing each message. This may be used to restrict the output of the NAV-7 when using a slow printer
Printer width	Specifies the number of characters to output on each line when printing messages. This must be at least 40 characters
Printer mode	Selects between 'On receipt' printing where the NAV-7 prints all messages as they are received and 'On demand' printing where the NAV-7 only prints selected messages when requested by the user
Monitor source	Selects serial interface for monitoring. This parameter is always reset to 'none' after a power cycle
Printer output	Selects which serial port is used for printing
NRX output	Selects which serial port is used for the output of NRX sentences when a message is received
ALR output	Selects which serial port is used for the output of ALR sentences

SYSTEM ALARMS

An alarm event state will always generate a message for sending to an IBS or remote alarm panel as well as actuating the NAV-7's remote alarm relay contacts.

The front panel LED and the buzzer are programmable – see **Setup mode : System options**. Consequently, these indicators may or may not activate to indicate an alarm.

The NAV-7 may generate alarms with the following alarm numbers:

<i>Alarm number</i>	<i>Alarm text</i>
001	NAVTEX: Navigational warning
002	NAVTEX: Meteorological warning
003	NAVTEX: Search and rescue information
004	NAVTEX: Receiver (x) malfunction
006	NAVTEX: General failure
052	NAVTEX: Antenna error
053	NAVTEX: Antenna overload

RECEIVER MONITORING

The NAV-7 continuously monitors the signals being received, and generates a "Receiver (x) malfunction" alarm (ID code 004) should any receiver appear to be operating incorrectly. The "x" in the alarm message is 1 for the 490 kHz receiver; 2 for the 518 kHz receiver and 3 for the 4209.5 kHz receiver.

Serial interfaces

The NAV-7 has two IEC 61162-2 compatible serial interfaces which can be used to connect the NAV-7 to other equipment such as an integrated bridge system or a PC running charting software. The IEC 61162-2 serial interfaces also allow for the connection of a serial printer. The integrated bridge system should be connected to the IBS port of the NAV-7 (using the 15-way D-type socket at the rear).

Printer Operation (option)

When the 'Printer mode' setting on the **Setup mode : Serial options** page is set to 'On Receipt', the NAV-7 outputs every message to the printer as it is received, subject to the control of the message filters. In this mode, the NAV-7 operates in a similar manner to a traditional 'paper-based' NAVTEX receiver.

However, in order to conserve paper, when the 'Printer mode' setting on the **Setup mode : Serial options** page is set to 'On Demand', the NAV-7 will only print messages when instructed to do so.

To print all messages as they are received:

Set the 'Printer mode' setting to 'On receipt'

Ensure all the 'PRINT' checkboxes for all stations and message categories on the message filters page for each receiver are not checked

To print all stored messages from a specified receiver:

Ensure all the 'PRINT' checkboxes for all stations and message categories on the message filters page for each receiver are not checked

Press the 'Print Messages' softkey on each of the Message filters pages to print out all the messages for the corresponding receiver

To print messages from selected stations and message categories as they are received:

Set the 'Printer mode' setting to 'On receipt'

Use the message filters to filter out the unwanted stations and message categories

To print individual messages only on demand:

Set the 'Printer mode' setting to 'On demand'

While viewing the full text of a message, press the 'Print Message' softkey

Note that this will always print the current message, irrespective of the settings of the message filters

To print all messages from specified locations or specified message categories only on demand:

Set the 'Printer mode' setting to 'On demand'

Set the 'PRINT' checkboxes on the Message filters page to filter out the unwanted stations and message categories

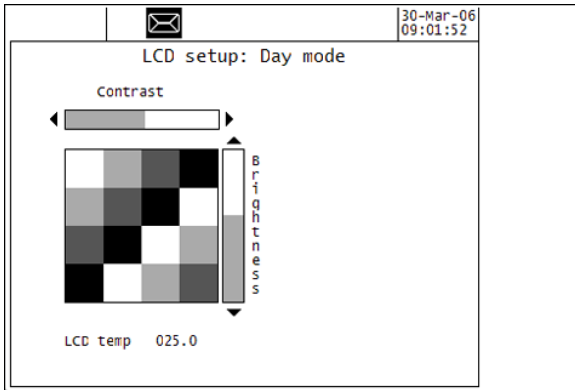
Press the 'Print Messages' softkey to print out all the messages which are not to be filtered out.

Note that this will only print out the messages for the current receiver. To print all the messages for each receiver it is necessary to operate the 'Print Messages' softkey on each of the Message filters pages in turn.

ADJUSTING THE DISPLAY

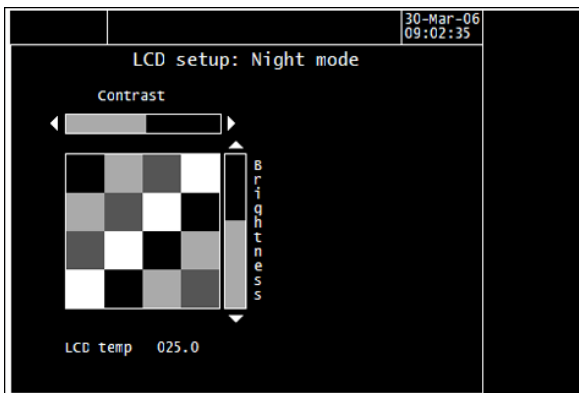
LCD setup day & night modes

To enter LCD setup mode, press and hold the illumination key for 3 seconds the **LCD setup: Day mode** page will be displayed.



Use the left and right (◀ and ▶) keys to adjust the LCD contrast.
Use the up and down (▲ and ▼) keys to adjust the LCD brightness.

To change the night mode settings, briefly press the illumination key. The **LCD setup: night mode** page will be displayed.

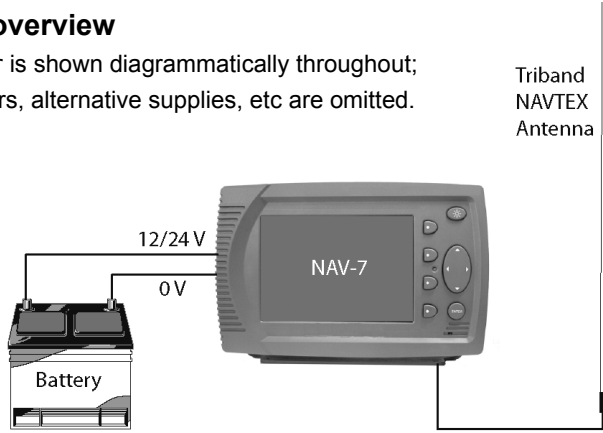


Note: These settings are non-volatile and will be unchanged after a power cycle.

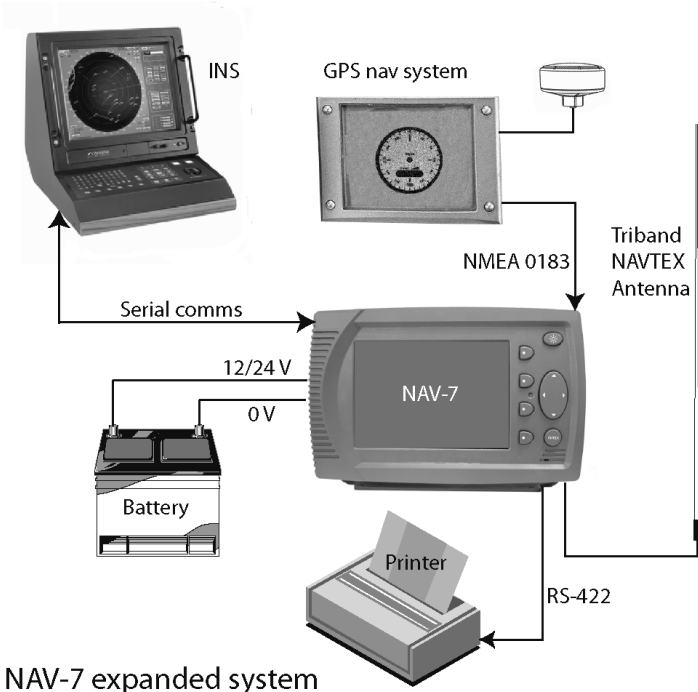
INSTALLATION

NAV-7 system overview

For simplicity, power is shown diagrammatically throughout; fuses, circuit breakers, alternative supplies, etc are omitted.



NAV-7 minimum system



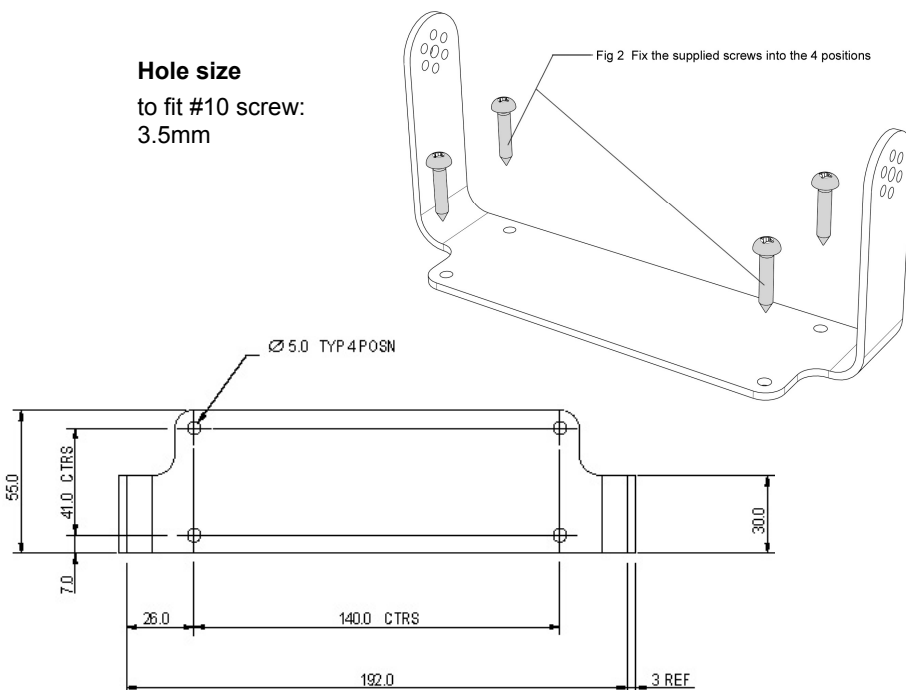
NAV-7 expanded system

Trunnion mounting the display

The standard bulkhead mounting U-Bracket can be used to mount the NAV-7 above or below a horizontal (or near horizontal) surface.

Hole size

to fit #10 screw:
3.5mm



Drilling drawing (mm)

Select hole size to suit method of fixing mountings – clear or tapped holes.

Rear view of trunnion bracket assembly

Ensure that rubber washers are fitted between the trunnion bracket and the plastic enclosure.

Tilt the display to the correct viewing angle.

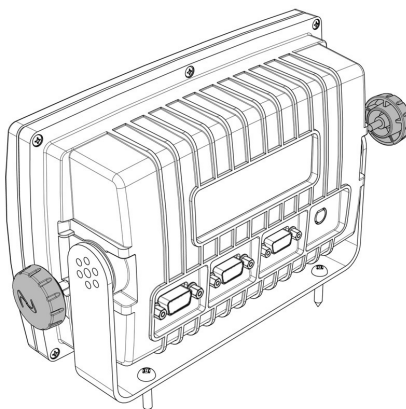
Tighten the two thumbwheels.

Mounted dimensions:

Height: 150 mm

Width: 270 mm

Depth: 120 mm (over connectors)



Flush mounting the display

If the NAV-7 is to be mounted through a flat panel, use the flush mounting kit provided.

A cutting template is supplied with the flush mounting kit. This template carries full fitting instructions.

Warning: Do not mount the NAV-7 in a position where sea spray can reach it, or where it may be exposed to direct sunlight

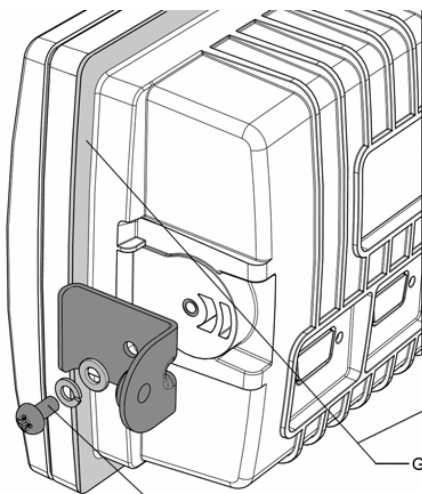
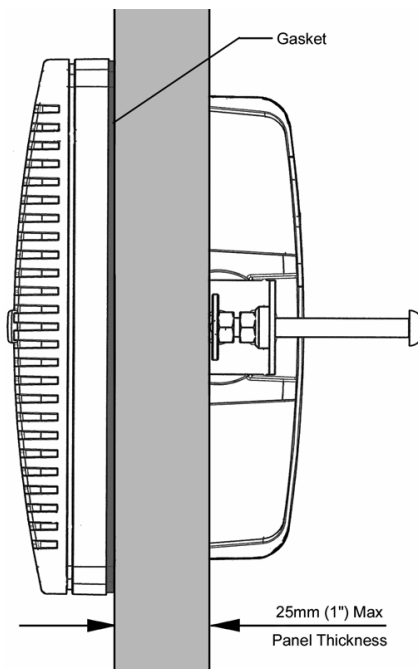


Fig 3a Fix the mounting brackets with the screws provided.

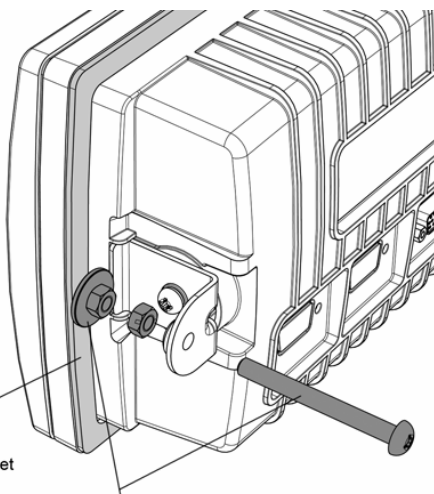


Fig 3b Fix the supplied bolting clamps.

Electrical Connections

This manual is concerned only with the installation of the NAV-7 and does not cover the installation of peripheral equipment connected to the NAV-7 such as printers, navigational systems or source of NMEA data in detail. For proper installation and connection of peripheral equipment refer to the installation manuals for these products.

The table below shows the connections that must be made to the NAV-7 for it to function correctly.

Connection	Must connect	Optional
Ship's earth connection	✓	
12V or 24 V DC power supply	✓	
NAVTEX antenna	✓	
Alarm Relay	✓	
NMEA or IBS UTC (time) reference	See Note 1	See Note 1
Integrated Bridge/Navigation System		✓
External printer		✓

Note 1: Connecting a UTC (time) reference (eg a GPS receiver) is highly recommended.

Ship's earth connection

The earth terminal on the rear of the NAV-7 display must be connected to ship's ground by the earth cable supplied. The earth connection should be kept as short as possible.

Safety Warning

To ensure the best possible protection of the NAV-7 from static electricity or nearby lightning strikes, the pre-fitted green grounding wire (connected to the safety earth spade) must be connected to a nearby (hull) electrical grounding point.

12V or 24 V DC power connection

A connection must be made to a 12 or 24 V DC supply via a circuit breaker capable of supplying at least 2 amps. Connection should be to the ship's radio battery and be in accordance with GMDSS requirements.

- Connections should be made using the 2 m power cable provided

- Use cable ties to restrain the wiring, and so prevent it becoming weakened by vibration. The connecting cables should be restrained by securing them to the rear of the NAV-7 bracket, or to adjacent metalwork
- The screen of the cable should be connected to ship's earth if possible. The screen of the cable **should not** be connected to ship's battery –ve
-

Safety Warning

The NAV-7 has been designed and manufactured to be completely safe when used in accordance with the instructions given in this manual. To ensure that the complete installation is safe, it is essential that a fuse or circuit breaker is installed in the power supply cable as described in the Installation section of this manual.

Isolation between the power supply connections and any other connection to the NAV-7 is 1 kV minimum.

The DC power source should comply with IMO guidelines for the class of vessel concerned. National authorities and classification societies may have their own power supply requirements; these should also be considered.

Signal cable connections

As shown in the table above, the NAV-7 may be connected to different types of peripheral units including IBS & INS serial ports and printers.

The signal connections are all connected via a serial RS422 type interface; data rates are selectable at 4800, 38400 or 115200 baud.

In some cases, particularly in retrofit installations, it may not be possible to connect the NAV-7 directly to the required source/destination for serial data, because some equipment does not provide the IEC 61162-2 (NMEA) sentences required by the NAV-7 unit. In such cases a protocol converter is required between the sensor and the NAV-7. Converters are available from different manufacturers, either as direct protocol converters or frequently as repeater instruments for the sensor.

IEC 61162-1 alarm message example

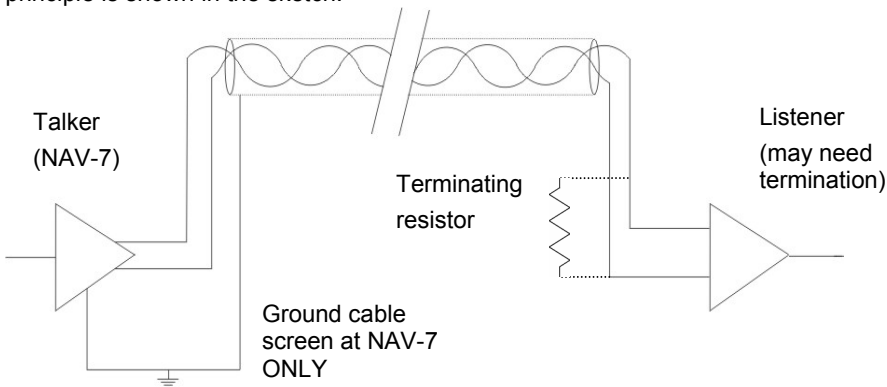
The alarm number and text are output as part of a standard ALR sentence format, for example:

\$CRALR,<time>,004,A,A,NAVTEX: Meteorological warning*<checksum>

Signal line termination

RS422 signal lines may need termination resistors at the far end of the serial cable connected to the NAV-7, depending on the length of connecting cable and the rate of data transmission. Both the IBS and the NMEA ports in the NAV-7 have inbuilt 100Ω termination resistors for both Tx and Rx.

Whether termination is required depends on many factors, particularly the length of the signal cable and the environment in which the equipment is operating. The principle is shown in the sketch:



There is only one talker per twisted pair; there can be several listeners. The intention is that terminations must be provided by the devices at the ends of the line, regardless of whether they are listeners or the talker, and that no other device should provide a termination.

Since the NAV-7 contains internal termination, it **MUST** be at the end of the line and **NOT** in the middle.

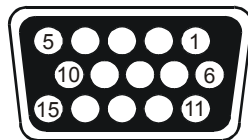
It is good practice to use screened cables in all ship cable installations. Take care to connect the cable screen to ship's ground at one end only of the cable, as connecting at both ends may cause ground loops and interference to the signals. The cable screen should not be connected to any part of the NAV-7.

Connecting to the IBS serial interface

The display connection cable is supplied ready for use, and needs only to be plugged into the appropriate connector on the NAV-7.

Display cable: *Six twisted pairs, screened, PVC sheathed. For lengths to 200 meters, use 0.22 mm² (7/32); Belden 8106 or equivalent.*

The connections to the 15-pin socket on the NAV-7 are given below. Note that the cable screen should not be connected to any part of the NAV-7.

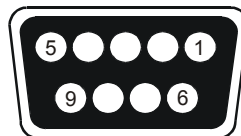


Power, Alarm & IBS port (2m cable supplied)				
Pin Number	Connection	NAV-7	Cable Colour	Notes
1	IBS_TXA	O/P	WHITE/BLUE	O/P to IBS port
2				
3	+V (12/24 V DC nominal)	I/P	RED/BLUE	Ship's supply +ve
4	-V (0V)	I/P	BLUE/RED	Ship's supply -ve
5				
6	IBS_TXB	O/P	BLUE/WHITE	O/P to IBS port
7				
8	AUX_NC	O/P	ORANGE/WHITE	Alarm Relay NC
9	AUX_NO	O/P	WHITE/BROWN	Alarm Relay NO
10	AUX_COM	O/P	WHITE/GREY	Alarm Relay COM
11				
12	IBS_RXB	I/P	GREEN/WHITE	I/P from IBS port
13	IBS_RXA	I/P	WHITE/GREEN	I/P from IBS port
14				
15				

Connecting to the NMEA 0183 interface

If a connection to NMEA 0183 compatible equipment is required then a suitable cable has to be purchased or manufactured.

Recommended NMEA 0183 cable: *Two twisted pairs, screened, PVC sheathed. For lengths to 200 meters, use 0.22 mm² (7/32); Belden 8102 or equivalent.*



The connections to the D-Sub 9-pin socket on the NAV-7 are given below. Note that the cable screen should not be connected to any part of the NAV-7.

NMEA 0183 & printer port		
Pin Number	Connection	Notes
1		
2	SER_TXB	O/P to NMEA 0183 (printer)
3		
4	SER_RXB	I/P from NMEA 0183
5		
6		
7	SER_TXA	O/P to NMEA 0183 (printer)
8	SER_RXA	I/P from NMEA 0183
9		

Alarm relay

The NAV-7 provides a relay connection which can be selected as normally closed or normally open contacts.

The alarm relay function is configurable from within the setup pages and can be set (for example) to switch (change state) on receipt of a Search and Rescue message or for a system fault.

The red LED on the front panel of the NAV-7 mirrors the function of the alarm relay.

Red LED function	
LED OFF	Alarm relay NC contact closed
LED ON	Alarm relay NO contact closed

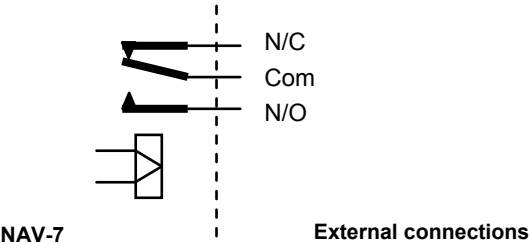
Recommended Remote Klaxon alarm unit (loud bridge repeater alarm) McMurdo part 40-187.

Recommended cable for connection of alarm relay:

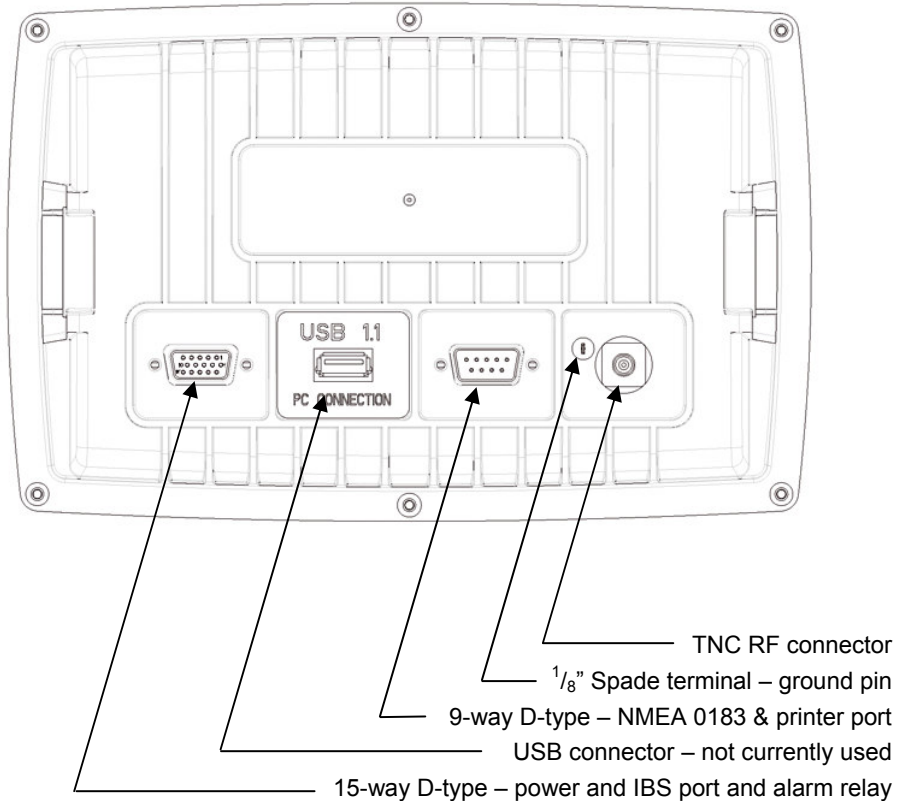
One twisted pair, shielded, PVC sheathed. The required cable dimension is dependent on the current necessary to activate the alarm indicator.

Built in alarm relay ratings:

Alarm relay absolute maximum ratings	
Maximum switching current in contacts (inductive load)	1.0 Amp
Maximum switching current in contacts (resistive load)	3.0 Amp
Maximum switching voltage	120 V AC or 24 V DC



Rear Panel Connections



- The auxiliary alarm contact is capable of switching up to 24 V DC at up to 1 A (inductive load). The contacts are not connected to any internal voltages.
- The power supply input is isolated from the case and antenna. It must remain within the range 10.8 – 31.2 V DC (12/24 V DC nominal) at all times.

Connecting a Printer

The recommended external printer option is the Seiko DPU-414; the default printer parameters are set correctly for this model. The printer should be connected to the NMEA port of the NAV-7 (the 9-way D-type socket at the rear):

DPU-414 pin 3 (RxD) to NAV-7 pin 7 (TxA)

DPU-414 pin 5 (Gnd) to NAV-7 pin 2 (TxB)

After connecting the printer, set the 'Printer port' parameter to 'NMEA port' on the Setup mode : Serial options page and ensure that the 'Bridge port' and 'Alarm port' parameters are set to either 'IBS' or 'None'. Set the 'NMEA port speed' to 4800.

The printer is powered by the mains adaptor supplied and must be configured for correct operation. The standard default settings for the printer should be used, except for the following:

- SW-1 Set for serial interface (not parallel)
- SW-2 Set for English (not Japanese)
- SW-3 Set for XON/XOFF control (not H/W BUSY)
- SW-4 Set for 4800bps (not 75bps)

Refer to the DPU-414 manual for details of how to set these parameters.

The compass safe distance for the printer is 1.0 m.

The printer should be secured to prevent it moving during operation. The use of adhesive foam pads is recommended.

ANTENNA INSTALLATION

Selecting a suitable antenna

The NAV-7 receives transmissions on three frequencies. 518 kHz transmissions are in International English; 490 kHz and 4209.5 kHz transmissions may be in a local language.

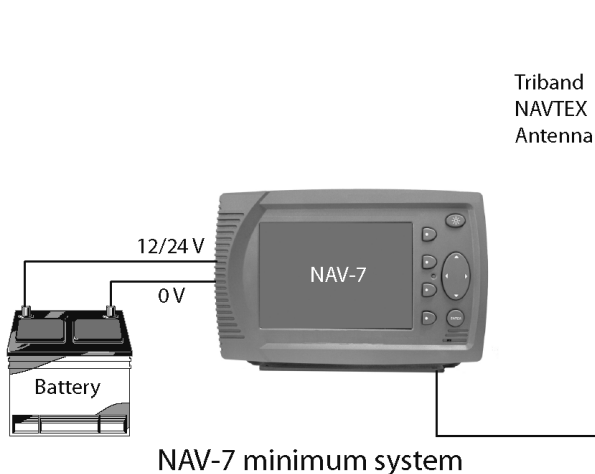
To receive on all frequencies the NAV-7 must be used with a wide frequency (400 kHz to 5 MHz) antenna that covers 518 kHz, 490 kHz and 4209.5 kHz.

If you have purchased the NAV-7 receiver without an antenna then a suitable active NAVTEX antenna should be used. McMurdo recommends the 905-05 as described in the following section.

If an alternative antenna type is used it must be a low impedance 50 ohm antenna or an antenna with a 50 ohm matching network. A mis-matched or high impedance whip or wire antenna should not be used as the operational range of NAVTEX reception may be greatly reduced; it is also important that the antenna is capable of reception over the frequency range specified above.

Wire or long whip antennas must be fitted with a 50 ohm matching transformer.

Important, disable the NAV-7 antenna power setting – refer to Setup – Receiver mode for details. If in any doubt a qualified GMDSS installer should be consulted.



Important

NAVTEX antennas must be mounted clear of obstructions and at least 0.5 metres away from other antennas.

Where practical avoid locating the NAVTEX antenna close to MF / HF transmitting antennas or VHF / AIS antennas.

Ensure that antennas cannot be snagged by mooring warps or running rigging or engulfed by green water.

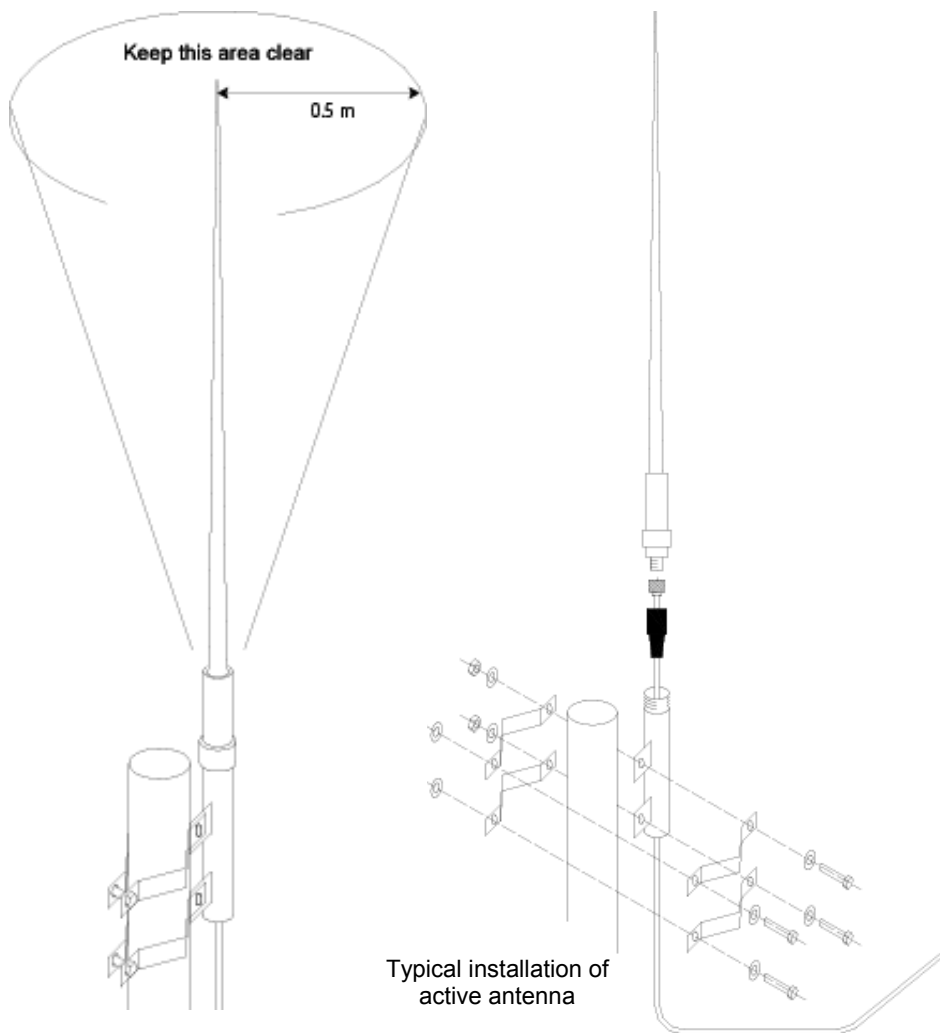
Antennas should always be mounted vertically in an elevated position.

Installation of the tri-channel NAVTEX antenna

Metal, rigging or other antennae must not be located in the 'NO GO cone' surrounding the upper part.

Use the mounting bracket supplied; an alternative mounting kit may be purchased if the mounting arrangement is unsuitable for your installation.

Attach the clamping brackets to the antenna mounting adapter and use the clamping arrangement to fix to a suitable vertical tube.



Thread the PL259 connector end of the coax cable through the antenna mounting adapter and secure the connector to the antenna 1" threaded adapter.

Slide the rubber boot over the PL259 connector; if desired, it may be filled with silicone grease for a better weatherproof seal.

Screw the antenna down into the antenna mounting adapter.

Ensure that the mounting adapter is connected to ground. If necessary, connect a grounding wire, 2.5 mm² minimum, to a suitable ground point.

Installation of the antenna cable

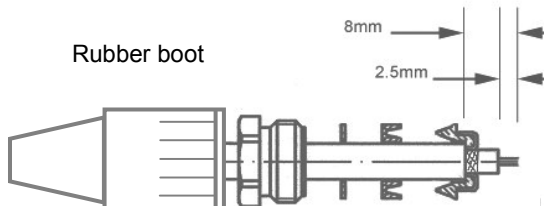
Start routing the antenna cable at the antenna end.

Where the cable passes through bulkheads or decks, waterproof deck glands should be installed. Securely fasten the cable against vibration using plastic cable tie wraps. Complete routing of the antenna cable at the NAV-7 TNC connector.

Fitting the TNC connector

A TNC connector is supplied as part of the NAV-7 Receiver Kit.

- Place the rubber boot, gland nut, washer and rubber seal onto cable. Remove the outer insulation for a distance of 8mm.
- Slide the cable braid sleeve over the screen braid, fold the braid back and trim off extra braid.
- Strip 2.5mm of the inner insulation to expose the centre conductor.
- Solder the pin onto the centre conductor.
- Assemble the connector and tighten the gland nut. Push the rubber boot securely over the gland nut.



Extending the antenna coax cable

If required, the coaxial cable may be extended with 50 ohm coaxial cable and connectors. The maximum cable length should not exceed 100 m. Ensure that any cable joints are well secured and waterproofed using self-amalgamating (rubber) tape.

Cable should be RG-58 / RG-67 / RG-213 / RG-214 grade or better; connectors should be suitable RF types (TNC, BNC, etc).

Testing the tri-channel active antenna installation

By default the NAV-7 provides a regulated 12 V DC (nom) 100 mA output to provide power for an active antenna such as the one supplied as part of a NAV-7 System.

If you are using an alternative active antenna please check that it is compatible with this power output. If it is not, then an external power supply interface will be required. Your antenna supplier should be able to provide this.

WARNING

Take care not to apply power to the antenna TNC connector from an external supply

Switch on the NAV-7 by applying power (12 V DC or 24 V DC) via a circuit breaker or fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.

The LCD display backlight will come on and the NAV-7 start-up screen will be shown.

If the antenna fault icon appears along the top of the display, switch off immediately and check for a short circuit at the antenna, the TNC connector or any other RF connections in-between. If the fault persists then please follow the trouble shooting guide in this manual.

Passive antenna installation

The NAV-7 regulated 12 V DC 100 mA output should be disabled for passive antenna installations or for installations using a matching transformer.

NOTE: This should be done the first time that power is applied to the NAV-7 BEFORE the antenna is connected.

Switch on the NAV-7 by applying power (12 V DC or 24 V DC) via a circuit breaker or fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.

The LCD display backlight will come on and the NAV-7 start-up screen will be shown.

If the antenna fault icon appears along the top of the display, switch off immediately and check for a short circuit at the antenna, the TNC connector or any other RF connections in-between. If the fault persists then please follow the trouble shooting guide in this manual.

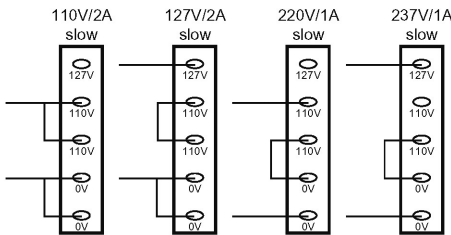
OPTIONAL POWER SUPPLY UNIT 89-029

Consult the installation instructions packed with the power supply.

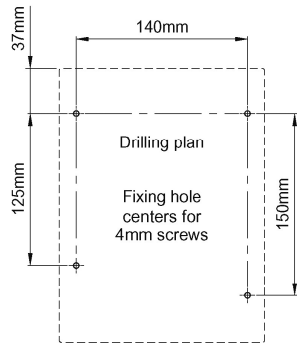
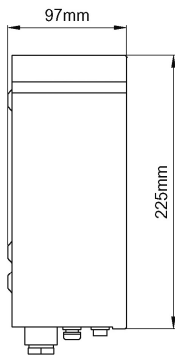
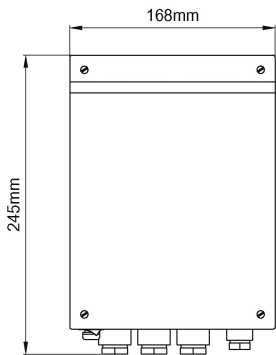
An additional ground wire may be connected between the green safety earth wire on the NAV-7 and the ground terminal on the NAVTEX Power Supply Unit.

Mains Voltage/Fuse Rating

(Wired and fused for 220V from factory)



Solder strip on transformer



Weight 5 kg

Dimensions and drilling plan

Technical specification

110 V AC	1.6 A
230 V AC	0.8 A
24 V DC	7.0 A

Power supply wiring

110 V AC	2 x 1.5 mm ²
230 V AC	2 x 0.7 mm ²
24 V DC	2 x 6.0 mm ²

OPTIONS

NAV-7 ancillary items:

Model	Description	Code
Active NAVTEX antenna	Commercial grade 518 – 490 kHz + 4209.5 kHz, SO239 socket, white glass fibre construction with 1 inch nut fitting	905-05
NAV-CLAMP	Pole mount stand-off bracket for NAVTEX Antenna, 1 inch bolt mount fitting (for 905-05).	903-01
NAV-CLAMP /b	Pole or Wall mount stand-off bracket for NAVTEX Antenna, 1 inch bolt mount fitting (for 905-05).	903-02
NAV-CLAMP /c	Deck mount for NAVTEX antenna, 1inch bolt mount fitting (for 905-05).	903-04
NAV-CABLE 20	20 m antenna cable kit (for 905-05).	35-820
Active S/S whip antenna	Light duty, 1m stainless steel wideband active whip antenna complete with 20 m attached cable and fixing plastic bracket	905-04
Klaxon alarm unit	Remote Klaxon alarm unit (loud bridge repeater alarm)	40-187
Seiko DPU-414	Remote thermal roll printer (sold directly by Seiko agents)	N/A
External Power Supply Unit	AC/DC + auto changeover to reserve power 110 / 220 V AC input	89-029

EXTERNAL RECEIVER

The NAV-7 has the capability to receive from an external receiver (not supplied) on an additional NAVTEX frequency should such an additional frequency be mandated by the IMO in the future.

NAVTEX messages from the external receiver appear on the View EXTERNAL RECEIVER page.

The external NAVTEX data must be presented as a stream of NMEA NRX sentences as defined in Annex C of the IEC 61097-6 Ed.2 (2005) specification.

The external receiver may be another NAV-7; in such a case, a single antenna may serve several displays. For more information, contact your dealer or the McMurdo Customer Service team.

MAINTENANCE GUIDE

General Points to Check

- Periodically make sure that the antenna connector is well sealed and that there isn't sign of corrosion around the PL259 connector
- Make sure connections to the back of the NAV-7 display are secure

Cleaning Instructions

- Periodically clean the LCD front window with a soft lint-free cloth (such as those supplied by opticians to clean spectacles)
- Do not use cleaning solvents on any part of the NAV-7

 **CAUTION:** Avoid using chemical solvents to clean the system as some solvents can damage the case material.

NOTE: The NAV-7 contains no user serviceable parts. Contact your Service Agent for repair advice or contact the McMurdo Customer Service team.

TROUBLESHOOTING GUIDE

General Points to Check

- Make sure the antenna is mounted vertically and is clear of obstructions
- Make sure the vessel is operating within the coverage area of a NAVTEX transmitter
- When the NAVTEX station(s) selected are transmitting, icons for 490, 518 and 4209.5 kHz show whenever a NAVTEX signal is received
- Ensure that the required NAVTEX station and message categories have not been deselected in the NAV-7 setup menu

Antenna fault icon appears at the top of the display: active antenna

- 1 Turn off the NAV-7
- 2 Disconnect the active antenna and check that there is not a short across the antenna's TNC connector
- 3 Turn on the NAV-7, apply a 120 ohm 5 W resistor across the TNC connector. If there is 12 V DC across the TNC then either the antenna or coax cable is faulty
- 4 If there is not 12 V DC across the TNC connector then check that **Antenna power : Enabled** is selected in the setup screens
- 5 If these instructions do not work then please contact your service agent

Antenna fault icon appears at the top of the display: passive antenna

- 1 Turn off the NAV-7
- 2 Disconnect the passive antenna and check that there is not a short across the antenna TNC connector
- 3 Check that the Antenna power setting is set to Disabled on the Receiver options setup screen
- 4 If these instructions do not work then please contact your service agent

No new message reception

- 1 Is the vessel within range of a NAVTEX transmitting station?
- 2 Has there been a scheduled transmission since the NAV-7 was first switched on?
- 3 Check that the antenna is clear of obstructions and has not suffered external damage and that the antenna cable is not damaged
- 4 Check that the antenna fault icon is not being displayed on the status bar at the top of the display
- 5 View the **Setup mode: Receiver options** screen check That the correct antenna power setting is selected according to antenna type fitted, 'active antenna' require that the antenna voltage to be set to; 'Enable'
- 6 View the **Setup mode: Receiver options** screen view the signal strength indicator, a constantly strong reading (no receive icon displayed) can indicate that a strong local interfering signal is blocking NAVTEX reception.

Testing a 905-05 tri-channel active antenna active antenna

If it is suspected that reception is being compromised by the antenna performance, the antenna should be checked for electrical damage.

Disconnect the antenna from the NAV-7 by unscrewing the TNC connector at the back of the NAV-7.

Using a DVM set on resistance, measure across the TNC RF connector from the centre pin to the outer ferrule, looking back up towards the antenna.

**DO NOT ATTEMPT TO MEASURE THE RESISTANCE
OF THE TNC SOCKET ON THE NAV-7.**

A good antenna will show a reading in the range 1500 – 2000 ohms.

A failed antenna will show a reading < 1000 ohms.

If a reading of greater than 5000 ohms is measured, then there is a continuity problem with the connector or cable; these should be checked for damage or misconnection.

Note that these resistance values only apply to a 905-05 active antenna as supplied by McMurdo. Other active antennas will have different resistance readings; consult the supplier in order to check such antennas.

SPECIFICATIONS

Complies with technical standards:	IMO Resolutions MSC.148(77) A.2.1, A694 (17) SOLAS Regulation IV/7.1.4 ITU-R M.540-2, ITU-R M.625-3, IEC 60945-4 IEC 61162-1,-2 IEC 61162-2 IEC 61097-6
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Receivers	
RxA Receiver Frequency	518 kHz
RxB Receiver Frequency	490 kHz
RxC Receiver Frequency	4209.5 kHz
Sensitivity	<2 microvolts
Frequency stability	+/- 10 Hz
Antenna Input	50 ohms
NAVTEX Reception	conforms to ITU-R 540-2, IEC 61097-6
NAVTEX message memory	Stores at least 300 x 500 character messages per receiver
Display	½ VGA (480 x 320 pixels) Colour STN CCFL backlight

Controls	LCD backlight dim/contrast 'Enter' key Four soft keys Tracker pad
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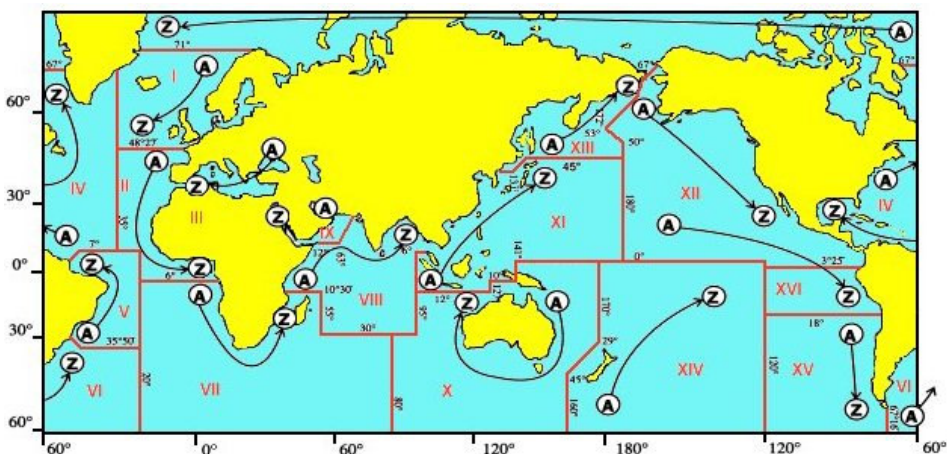
Menu languages supported	English
Alphabets supported	English
Rear Connections	Power, Alarm & IBS port RS422 (NMEA 0183 port) USB port (unused) Antenna connector Earth stud

IBS Port RS422 Serial Interface	15 way D-type Conforms to IEC 61162-2 8 data, 1 stop, no parity Baud rates 4800, 38400, 115200 Supports (in priority order) RMC, GLL, ZDA for date and time Supports ZDA for date / time Supports NRX, NRQ, NMK, ACK, ALR for NAVTEX functions
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Interface	Conforms to IEC 61162-1 8 data, 1 stop, no parity Baud rates 4800, 38400, 115200 Supports ZDA for date / time Supports NRX, NRQ, NMK, ACK, ALR for NAVTEX functions
USB Serial Interface	Type A connector USB 1.1 (device) interface (unused)
Antenna connector	TNC connector 50 ohms 12 V DC @ 100 mA for active antennas, auto-sensing
Alarms (internal buzzer)	Vital message receipt Antenna fault alarm
Alarm Relay Rating	1A @ 120 V AC / 24 V DC (max)
Environmental	Meets the relevant parts of IEC60197-2 and IEC 60945-4 for 'protected' equipment -15° to +55° C
Operating Temperature Range	
Storage Temperature Range	-20° to +55° C
Humidity	0 to 95%, non-condensing
Mounting	Below decks, desk-top, bulkhead or panel mount
Weight including bracket	1100 g
Dimensions	219 mm W x 151 mm H x 76 mm D
Mounting	Shelf/bulkhead or panel mount (both kits provided)
Compass safe distance	0.87 metres
Compass deviation	0.3° at 0.65m 1° at 0.41m.
Power	
Voltage range	12/24 V DC nominal (10.8 V to 31.2 V)
Consumption, backlight dimmed	5.7 W @ 24 V DC
Consumption, backlight full on	8.6 W @ 24 V DC
Fused internally	1.8 A resettable type

McMurdo reserves the right to change specifications without notice.

NAVTEX STATIONS LIST



518 kHz NAVTEX stations

Id	Area	Country	Name	Latitude	Longitude	Range (NM)
A 01		Svalbard	Svalbard	78°04' N	13°38' E	450
A 02		France	Corsen	48°28' N	5°03' W	300
A 03		Russia	Novorossiysk	44°36' N	37°58' E	300
A 04		USA	Miami	25°30' N	80°23' W	240
A 09		Iran	Bushehr	28°58' N	50°50' E	300
A 11		Indonesia	Jayapura	2°31' S	140°43' E	300
A 13		Russia	Vladivostok	43°07' N	131°53' E	280
A 15		Chile	Antofagasta	23°40' S	70°25' W	300
B 01		Norway	Bodo	67°16' N	14°23' E	450
B 03		Algeria	Alger Radio	36°40' N	03°18' E	500
B 04		Bermuda	Bermuda Harbour	32°23' N	64°41' W	280
B 07		Namibia	Walvis Bay	23°03' S	14°37' E	380
B 09		Bahrain	Hamala	26°09' N	50°28' E	300
B 11		Indonesia	Ambon	3°42' S	128°12' E	300
B 13		Russia	Kholmsk	47°02' N	142°03' E	300
B 15		Chile	Valparaiso	32°48' S	71°29' W	300
C 01		Russia	Murmansk	68°58' N	33°05' E	140
C 03		Ukraine	Odessa	46°29' N	30°44' E	280
C 04		Canada	Riviere-au-Renard	50°11' N	66°07' W	300
C 07		South Africa	Cape Town	33°41' S	18°43' E	500
C 08		Mauritius	Mauritius	20°10' S	57°28' E	400
C 11		Singapore	Singapore	1°20' N	103°42' E	400
C 12		USA	San Francisco	37°55' N	122°42' W	350
C 13		Russia	Petropavlosk	53°00' N	158°40' E	280
C 15		Chile	Talcahuano	36°42' S	73°06' W	300
D 01		Faroes	Torshavn	62°01' N	06°48' W	250
D 02		Spain	Coruna	43°22' N	8°27' W	400
D 03		Turkey	Istanbul	41°04' N	28°57' E	300
D 11		Indonesia	Makassar	5°06' S	119°26' E	300
D 12		Canada	Prince Rupert	54°18' N	130°25' W	300
D 13		Russia	Magadan	59°40' N	151°01' E	200
D 15		Chile	Puerto Montt	41°29' S	72°57' W	300
E 01		England	Niton	50°35' N	1°18' W	270
E 03		Turkey	Samsun	41°17' N	36°20' E	300
E 11		Indonesia	Jakarta	6°07' S	106°52' E	300
E 12		USA	Savannah	32°08' N	81°42' W	200
E 15		Chile	Magallanes	52°56' S	70°54' W	300

Id	Area	Country	Name	Latitude	Longitude	Range (NM)
F	01	Russia	Arkhangelsk	64°33' N	40°32' E	300
F	02	Azores	Horta	38°32' N	28°38' W	640
F	03	Turkey	Antalya	36°53' N	30°42' E	300
F	04	USA	Boston	41°43' N	70°31' W	200
F	06	Uruguay	La Paloma	34°40' S	54°09' W	280
F	09	Iran	Bandar Abbas	27°08' N	57°04' E	300
F	11	Thailand	Nonthaburi	13°01' N	100°01' E	200
F	13	Russia	Okhotsk	59°22' N	143°12' W	300
F	15	Easter Island	Isla de Pascua	27°09' S	109°23' W	300
G	01	England	Cullercoats	55°04' N	1°28' W	270
G	02	Spain	Tarifa	36°01' N	5°34' W	400
G	03	Ukraine	Kerch	45°23' N	36°28' E	280
G	04	USA	New Orleans	29°53' N	89°55' W	200
G	08	India	Mumbai	19°05' N	72°50' E	299
G	09	Iran	Fereydoon Kenar	36°42' N	53°33' E	250
G	09	Saudi Arabia	Damman	26°26' N	50°06' E	390
G	11	Japan	Naha	26°09' N	127°46' E	400
G	15	Easter Island	Isla de Pascua	27°09' S	109°23' W	300
H	01	Sweden	Bjuröklubb	64°28' N	21°36' E	300
H	03	Greece	Iraklion	35°20' N	25°07' E	280
H	04	Canada	Prescott	44°20' N	81°10' W	300
H	06	Dutch Antilles	Curacao	12°10' N	68°52' W	250
H	09	Saudi Arabia	Jeddah	21°23' N	39°11' E	390
H	11	Japan	Moji	33°52' N	130°36' E	400
H	12	Canada	Tofino	48°56' N	125°32' W	300
H	15	Chile	Antofagasta	23°40' S	70°25' W	300
I	01	Sweden	Grimeton	57°06' N	12°23' E	299
I	02	Canary Isles	Las Palmas	28°09' N	15°25' W	400
I	03	Turkey	Izmir	38°21' N	26°35' E	300
I	07	South Africa	Port Elizabeth	33°57' S	25°31' E	500
I	11	Japan	Yokohama	35°22' N	139°36' E	400
I	11	Philippines	Porto Princesa	9°44' N	121°03' E	320
I	15	Chile	Valparaiso	32°48' S	71°29' W	300
J	01	Sweden	Gislövshammer	55°29' N	14°19' E	300
J	03	Bulgaria	Varna	43°04' N	27°46' E	350
J	11	Japan	Otaru	43°12' N	141°00' E	400
J	11	Philippines	Manila	14°35' N	121°03' E	320
J	12	Alaska	Kodiak	57°46' N	152°34' W	200
J	15	Chile	Talcahuano	36°42' S	73°06' W	300
K	01	England	Niton (Northern France)	50°35' N	1°18' W	270
K	03	Greece	Kerkyra	39°45' N	19°52' E	280
K	11	Japan	Kushiro	42°59' N	144°23' E	400
K	11	Philippines	Davao	7°04' N	125°36' E	320
K	11	Viet Nam	Da Nang	16°05' N	108°13' E	400
K	15	Chile	Puerto Montt	41°29' S	72°57' W	300
L	01	Norway	Rogaland	58°39' N	5°36' E	450
L	03	Greece	Limnos	39°52' N	25°04' E	280
L	11	Hong Kong	Hong Kong	22°13' N	114°15' E	299
L	12	Equador	Ayora	00°45' S	90°19' W	400
L	15	Chile	Magallanes	52°56' S	70°54' W	300
M	01	Belgium	Oostende (Thames)	51°11' N	2°48' E	150
M	02	Morocco	Casablanca	33°36' N	7°38' W	180
M	03	Cyprus	Cyprus	35°10' N	33°26' E	200
M	06	Argentina	Ushuaia	54°48' S	68°18' W	280
M	09	Oman	Muscat	23°37' N	58°31' E	270
M	11	China	Sanya	18°14' N	109°30' E	250
M	12	Equador	Guayaquil	02°17' S	72°01' W	250
N	01	Norway	Orlandet	63°40' N	9°33' E	450
N	03	Egypt	El Iskandariya	31°12' N	29°52' E	350
N	04	USA	Portsmouth	36°44' N	76°01' W	280
N	06	Argentina	Rio Gallegos	51°37' S	69°03' W	280
N	11	China	Guangzhou	23°09' N	113°29' E	250
O	01	Scotland	Portpatrick	54°51' N	5°07' W	270
O	03	Malta	Malta	35°49' N	14°32' E	400
O	04	Canada	St Johns	47°37' N	52°40' W	300
O	06	Argentina	Comodoro Rivadavi	45°51' S	67°25' W	280
O	07	South Africa	Durban	29°48' S	30°49' E	500

ID	Area	Country	Name	Latitude	Longitude	Range (NM)
O	11	China	Fuzhou	26°02' N	119°18' E	250
O	12	Hawaiian Islands	Honolulu	21°22' N	158°09' W	350
P	01	Netherlands	Scheveningen	52°06' N	4°15' E	110
P	03	Israel	Haifa	32°49' N	35°00' E	200
P	04	Canada	Thunder Bay	48°26' N	89°13' W	300
P	06	Argentina	Bahia Blanca	38°43' S	62°06' W	280
P	08	India	Madras	13°08' N	80°10' E	299
P	09	Pakistan	Karachi	24°51' N	67°03' E	400
P	11	Taiwan	Keelung	25°08' N	121°45' E	540
P	11	Taiwan	Linyuan	22°29' N	120°25' E	540
Q	01	Ireland	Malin Head	55°22' N	7°21' W	400
Q	03	Croatia	Split	43°30' N	16°29' E	085
Q	04	Canada	Sydney	46°11' N	59°54' W	300
Q	06	Argentina	Mar del Plata	38°03' S	57°32' W	280
Q	11	China	Shanghai	31°07' N	121°33' E	250
Q	12	USA	Long Beach	35°31' N	121°03' W	350
R	01	Iceland	Reykjavik	64°05' N	21°51' W	550
R	02	Portugal	Monsanto	38°44' N	9°11' W	530
R	03	Italy	Roma	41°48' N	12°31' E	320
R	06	Argentina	Buenos Aires	34°36' S	58°22' W	560
R	11	China	Dalian	38°52' N	121°31' E	250
R	12	Puerto Rico	Isabella	18°28' N	67°4' W	200
S	01	Germany	Pinneberg	53°43' N	09°55' E	250
S	11	Malaysia	Sandakan	5°54' N	118°00' E	350
S	16	Peru	Paita	5°05' S	81°07' W	200
T	01	Belgium	Oostende	51°11' N	2°48' E	050
T	03	Sardinia	Cagliari	39°14' N	9°14' E	320
T	04	Canada	Iqaluit	63°44' N	68°33' W	200
T	11	Malaysia	Miri	4°28' N	114°01' E	350
U	01	Estonia	Tallinn	59°30' N	24°30' E	300
U	02	Cape Verde	Ribiera de Vinha	16°51' N	25°00' W	250
U	03	Italy	Trieste	45°41' N	13°46' E	320
U	04	Canada	Fundy	45°14' N	65°59' W	300
U	11	Malaysia	Penang	5°25' N	100°24' E	350
U	16	Peru	Calleo	12°03' S	77°09' W	200
V	01	Norway	Vardo	70°22' N	31°06' E	450
V	09	Egypt	Kosseir	26°06' N	34°17' E	350
V	11	Mariana Islands	Guam	13°29' N	144°50' E	100
V	11	South Korea	Chukpyon	37°03' N	129°26' E	200
W	01	Ireland	Valentia	51°56' N	10°21' W	400
W	03	France	La Garde	43°06' N	5°59' E	250
W	03	Russia	Astrakhan	45°47' N	47°33' E	250
W	04	Greenland	Kook Islands	64°04' N	52°01' W	400
W	11	South Korea	Pyonsan	35°36' N	126°29' E	200
W	11	Viet Nam	Hai Phong	20°44' N	106°44' E	400
W	12	USA	Astoria	46°10' N	123°49' W	216
W	16	Peru	Matarani	17°01' S	72°01' W	200
X	01	Iceland	Reykjavik	64°05' N	21°51' W	550
X	03	Spain	Valencia	38°43' N	0°09' E	300
X	04	Canada	Labrador	53°18' N	60°33' W	300
X	09	Egypt	Ismalia	30°28' N	32°22' E	200
X	11	Viet Nam	Ho Chi Minh-City	10°47' N	106°40' E	400
X	12	Alaska	Kodiak	57°46' N	152°32' W	200

490 kHz NAVTEX stations

ID	Area	Country	Name	Latitude	Longitude	Language
A	02	Canary Isles	Las Palmas	28°09' N	15°25' W	Spanish
A	03	Turkey	Samsun	41°17' N	36°20' E	Turkish
A	06	Uruguay	La Paloma	34°40' S	54°9' W	Spanish
A	06	Argentina	Ushuaia	54°48' S	68°18' W	Spanish
A	12	Equador	Ayora	00°45' S	90°19' W	Spanish
B	03	Turkey	Istanbul	41°04' N	28°56' E	Turkish
B	06	Argentina	Rio Gallegos	51°37' S	69°3' W	Spanish
C	01	Scotland	Portpatrick	54°51' N	05°07' W	English
C	03	Turkey	Izmir	38°21' N	26°35' E	Turkish
C	06	Argentina	Comodoro Rivadavi	45°51' S	67°25' W	Spanish

Id	Area	Country	Name	Latitude	Longitude	Language
D	03	Turkey	Antalya	36°53' N	30°42' E	Turkish
D	04	Canada	Rivière-au-Renard	50°11' N	66°06' W	French
D	06	Argentina	Bahia Blanca	38°43' S	62°06' W	Spanish
E	02	France	Corsen	48°28' N	05°03' E	French
E	06	Argentina	Mar del Plata	38°03' S	57°32' W	Spanish
F	06	Argentina	Buenos Aires	34°36' S	58°22' W	Spanish
G	02	Portugal	Monsanto	38°44' N	09°11' W	Portuguese
I	01	England	Niton	50°35' N	01°18' W	English
J	02	Azores	Horta	38°32' N	28°38' W	Portuguese
J	04	Canada	Sydney	46°11' N	59°54' W	French
J	11	South Korea	Chukpyon	37°03' N	129°26' E	Korean
K	11	South Korea	Pyonsan	35°36' N	126°29' E	Korean
L	01	Germany	Pinneberg	53°43' N	09°55' E	German
L	03	Romania	Constanta	44°06' N	28°37' E	Romanian
P	02	Cape Verde	Ribiera de Vinha	16°51' N	25°00' W	English
R	01	Iceland	Reykjavik	64°05' N	21°51' W	Icelandic
S	03	France	La Garde	43°06' N	05°59' E	French
S	04	Canada	Iqaluit	63°44' N	68°33' W	French
T	01	England	Niton	50°35' N	01°18' W	French
U	01	England	Cullercoats	55°02' N	01°26' W	English
U	03	Ukraine	Kerch	45°23' N	36°28' E	English
V	03	Algeria	Alger Radio	36°40' N	03°18' E	English
V	04	Canada	Fundy	43°45' N	66°10' W	French
V	11	Taiwan	Lintou	23°33' N	119°38' E	Chinese
X	03	Ukraine	Odessa	46°29' N	30°44' E	English
X	11	Taiwan	Yenliaoken	23°54' N	121°36' E	Chinese

4209.5 kHz NAVTEX stations

Id	Area	Country	Name	Latitude	Longitude	Language
M	03	Turkey	Istanbul	41°04' N	28°56' E	Turkish
P	11	Taiwan	Keelung	25°08' N	121°45' E	English
P	11	Taiwan	Linyuan	22°29' N	120°25' E	English
V	11	Taiwan	Keelung	25°08' N	121°45' E	Chinese
W	11	Viet Nam	Hai Phong	20°44' N	106°44' E	Vietnamese
X	09	Egypt	Ismalia	30°28' N	32°22' E	English
X	11	Taiwan	Linyuan	22°29' N	120°25' E	Chinese

No liability can be accepted for any inaccuracies or omissions in this NAVTEX stations table, although every care has been taken to make it as complete and accurate as possible.

For updated NAVTEX station listings information refer to the current UK *“Admiralty List of Radio Signals, Volume 5”* or equivalent national publications.

NAVTEX Transmission times

STATION	TRANSMISSION TIMES (UTC)					
A	00:00	04:00	08:00	12:00	16:00	20:00
B	00:10	04:10	08:10	12:10	16:10	20:10
C	00:20	04:20	08:20	12:20	16:20	20:20
D	00:30	04:30	08:30	12:30	16:30	20:30
E	00:40	04:40	08:40	12:40	16:40	20:40
F	00:50	04:50	08:50	12:50	16:50	20:50
G	01:00	05:00	09:00	13:00	17:00	21:00
H	01:10	05:10	09:10	13:10	17:10	21:10
I	01:20	05:20	09:20	13:20	17:20	21:20
J	01:30	05:30	09:30	13:30	17:30	21:30
K	01:40	05:40	09:40	13:40	17:40	21:40
L	01:50	05:50	09:50	13:50	17:50	21:50
M	02:00	06:00	10:00	14:00	18:00	22:00
N	02:10	06:10	10:10	14:10	18:10	22:10
O	02:20	06:20	10:20	14:20	18:20	22:20
P	02:30	06:30	10:30	14:30	18:30	22:30
Q	02:40	06:40	10:40	14:40	18:40	22:40
R	02:50	06:50	10:50	14:50	18:50	22:50
S	03:00	07:00	11:00	15:00	19:00	23:00
T	03:10	07:10	11:10	15:10	19:10	23:10
U	03:20	07:20	11:20	15:20	19:20	23:20
V	03:30	07:30	11:30	15:30	19:30	23:30
W	03:40	07:40	11:40	15:40	19:40	23:40
X	03:50	07:50	11:50	15:50	19:50	23:50

END OF LIFE STATEMENT

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to minimise any adverse impact of electronic equipment on the environment, both during the product lifetime and when it becomes waste. Within the European Union this legislation is mandated by Directive 2002/96/EC, and there is similar legislation in most other continents. The directive applies to all electronic products such as IT, household appliances, portable electronics etc., and imposes requirements to collect, treat, recover and recycle each product at its end of life. Electronic end-user products must also carry a WEEE label (as below) and recovery and recycling information has to be provided to the recycler.

This product may contain lead and brominated flame retardants (BFRs), both in the housing material and circuit boards.

In keeping with the directive, McMurdo strongly recommends that this product be disposed of in a sensible and considerate manner. For example, do not simply discard the product in the domestic waste. Instead take it to a civil recycling facility, or contact McMurdo for advice.



DECLARATION OF CONFORMITY

mcmurdo

Silver Point
Port Service Road
Portsmouth
Hampshire UK
PO3 5PB
Int + 44 (0)23 9262 3900
www.mcmurdo.co.uk

EC DECLARATION OF CONFORMITY

We declare that the following products comply with the essential requirements of Council Directive 96/98/EC on the approximation of the laws of the member States relating to Marine Equipment as amended by Commission Directives 98/85/EC, 2001/63/EC, 2002/75/EC and 2002/84/EC, as evidenced by a EC Type Examination Certificate as detailed overleaf.

Products covered by this Declaration

Product Type: GNDSS NAVTEX receiver
(Commission Directive 2002/75/EC, Item A.115.3)

Models : **McMurdo NAV-7**

Intended usage of products

All vessels which must comply with IMO SOLAS regulations in coastal or International waters. Surveillance conformity assessment is undertaken in accordance with Production Quality Assurance Module D by:

QinetiQ (No. 0191)
Cody Technology Park
Ively Road
Farnborough GU14 0LX
United Kingdom

The product will carry this Conformity Marking:



XX = last two digits of rear mark affixed

Issued on behalf of McMurdo, a Division of Signature Industries Ltd.

Signed : 

Name: N.Jordan
Title: Engineering Manager
Date: 06/03/2008

See overleaf for technical information

Page 1 of 2

EC Type Examination Certificate:

Name of Notified Body: QinetiQ (No. 0191)
QinetiQ, Cody Technology Park,
Ively Road, Farnborough GU14 0LX UK

Certificate: **QQ-MED-12006-01R2** 5th February 2008

Regulations and Standards complied with:

IEC 61097-6 : 2005
BS EN 60945 : 2002

Additionally, the equipment is certified as complying with IEC61097-6 : 1995, and is recognised as complying with IMO Resolutions A.323(13), as amended by MSC.146(77), and with A.654(17).

Technical Construction File held by:

McMurdo, a Division of
Signature Industries Limited,
Silver Point, Airport Service Road, Portsmouth, Hampshire PO3 5PB UK

ATTENTION

The attention of the specifier, purchaser, and the user is drawn to special measures and limitations to use which must be observed when the product is taken into service to maintain compliance with the above directive. Details of these special methods and limitations to use are available on request, and are also contained in the product owner manuals.

This Declaration complies with EN ISO/IEC 17050-1:2004



BS EN ISO 9001
0191 QinetiQ Ltd
Registered Office: Tom Cabb Road, Thurnham
London SE26 6AR, United Kingdom
UK TNo. 08-205 3127 57

35-637 Iss.3

Page 2 of 2

PRODUCT WARRANTY

McMurdo is a brand operated by Signature Industries Limited. Subject to the provisions set out below McMurdo warrants that this product will be free of defects in materials and workmanship for a period of 24 months from the date of purchase.

McMurdo will not be liable to the buyer under the above warranty:-

- for any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow McMurdo's instructions (whether oral or in writing) including a failure to install properly and/or to use batteries recommended and/or supplied by McMurdo, misuse or alterations or repair of the product by persons other than McMurdo or an Approved Service Agent;
- for parts, materials or equipment not manufactured by McMurdo in respect of which the buyer shall only be entitled to the benefit of any warranty or guarantee given by the manufacturer to McMurdo;
- for the battery storage life which is specifically excluded from this warranty;
- if the total price for the product has not been paid.

THE LIMITED WARRANTY STATED ABOVE IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

McMurdo will not be liable for indirect, special, incidental or consequential damages of any kind sustained from any cause. In no event shall McMurdo be liable for any breach of warranty or other claim in an amount exceeding the purchase price of the product. This warranty does not affect any statutory rights of the consumer.

In order to be valid, claims must be made under the above warranty in writing as soon as practicable after discovery of the defect or failure and within the warranty period referred to above. Proof of purchase will be required. The claim should be sent together with the product in question to the address set out below or to an Approved Service Agent.

Following a valid warranty claim McMurdo shall be entitled to repair or replace the product (or part) in question free of charge, or at McMurdo's sole discretion to refund to the buyer the price of the product (or a proportional part of the price). McMurdo shall not be liable to a buyer who is not a consumer for any other loss or damage (whether indirect, special or consequential loss of profit or otherwise) costs, expenses or other claims for compensation which arise out of or in connection with this product. In the case of a consumer McMurdo shall only be liable where other loss or damage is foreseeable.

Nothing shall limit McMurdo's liability for death or personal injury caused by its negligence.

This warranty is to be interpreted under English law.

All enquiries relating to this warranty or Approved Service Agents should be sent to:

McMurdo a Division of Signature Industries Limited, Silver Point, Airport Service Road, Portsmouth, Hampshire, PO3 5PB UK

Telephone: Int + 44 (0) 23 9262 3900 Fax: Int + 44 (0) 23 9262 3998

Web: www.mcmurdo.co.uk Email: customerservice@mcmurdo.co.uk

McMurdo

A Division of Signature Industries Ltd

Silver Point

Airport Service Road

Portsmouth PO3 5PB

United Kingdom

Tel: +44 (0) 23 9262 3900

Fax: +44 (0) 23 9262 3998

www.mcmurdo.co.uk

Email: sales@mcmurdo.co.uk

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